Tata Institute of Fundamental Research
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Colloquium

Metabolism across scales in development and disease

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Cellular metabolism constituted one of the early focal themes in biology, which led to the elucidation of complex regulatory pathways. However, the interplay of these pathways in cellular deterministic processes such as growth and differentiation was largely unknown. In this talk, I will first discuss my results that reveal the presence of a glycolytic activity gradient across the mouse embryonic presomitic mesoderm (PSM) tissue. Using stable isotope tracing by mass spectrometry and imaging using a pyruvate biosensor, I find that this metabolic gradient develops as a consequence of cellular differentiation in the PSM and is therefore an intrinsic feature of cellular state. This will be followed by the work where the extrinsic tumor microenvironment switches the metabolite requirement for the growth and survival of cancer cells. I will also discuss our most recent study where we have identified a lipid metabolic symbiotic relationship between transformed pancreatic ductal epithelial cells and pancreatic stellate cells. These results collectively show that metabolism is organized across diverse cellular scales and has functional relevance in health and disease.

Monday, Jul 16th 2018

4:00 PM (Tea/Coffee at 3:30 PM)

Seminar Hall, TIFR-H